



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/839,254	04/20/2001	Donald Bennett Hilliard	DBH004	1542

7590 10/07/2002
Donald B. Hilliard
3050 North Fontana
Tucson, AZ 85705

EXAMINER

INZIRILLO, GIOACCHINO

ART UNIT PAPER NUMBER

2828

DATE MAILED: 10/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/839,254

Applicant(s)

HILLIARD, DONALD BENNETT

Examiner

Gioacchino Inzirillo

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.



PAUL IP

SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claims 3 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 3 recites the limitation that additional layers are deposited. It cannot be understood from the context of the claim where they are deposited. This claim is indefinite. Claim 5 recites the limitation of a material with an optical absorption cut-off. It cannot be determined from the context of the claim where the material is located in relation to the cavity. This claim is indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3 – 5, 8 – 11, 13, 17, 18, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baer US 4,829,537 (herein after known as Baer) in view of Emmett US 4,925, 259 (herein after known as Emmett).

Regarding claims 1, 4, 17, 18, 19 and 21, in Baer, column 2 line 67 through column 3 line 14, there is described how the laser cavity of the Baer invention is formed. Fig. 1 of Baer is the

Art Unit: 2828

corresponding figure to this to description, and shows pump radiation being coupled through the surface of revolution. The spherical gain medium 12 has coating 14 applied to its entire surface. This combination of gain medium and reflector forms the resonator cavity 18. Being a sphere, the cavity is inherently a surface of revolution. It is also inherent that the opposed sides of the spherical cavity define opposing optically reflecting surfaces. Column 5, lines 13 – 23, tells that the Baer invention can be made to operate in such a way as to allow preferred modes to be emitted. This preferred mode operation results in a single longitudinal mode, single frequency output. Baer fails to teach a multilayer dielectric reflector. However, Emmett teaches such a reflector in his patent. Fig. 2 of Emmett shows discloses the invention of an alternating layer structure built atop a substrate, where each layer has either one of two indices of refraction. The invention is generally described in column 1, line 67, through column 2, line 2, as a multilayer dielectric coating for optical elements, which is designed to have a high damage threshold. The invention is further described in column 2, lines 36 – 39, as a multilayer dielectric coating having from 100 to 100,000 or more layers. The at least 120 layers recited in claim 21 is encompassed by the range of Emmett. Column 5, lines 25 – 26, of Emmett describe an embodiment where the difference in the indices of refraction is only 0.015, which is smaller than 0.2. Baer gives some examples of the materials of which his coating could be made in column 5, lines 3 – 5. Amongst those listed is quartz. Emmett mentions the same material in column 4, line 40 of his patent. As one of ordinary skill in the art would know, fused silica is quartz. Therefore, for all intents and purposes, the isotropic coating 14 of Baer is, or could be, a multilayer dielectric coating. If it is not, however, a multilayer coating could still be used as the optical coating, since Baer tells us in column 2, line 68, that the coating is an isotropic coating, and places no further restrictions on

Art Unit: 2828

the coating. Since the multilayer dielectric coating of Emmett is isotropic, it can be substituted for the coating of Baer. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Baer with the multilayer dielectric coating as taught by Emmett.

Regarding claims 3 and 5, column 2, lines 36 – 39, of Emmett describes 100 to 100,00 layers, which could be adapted for other purposes.

Regarding claims, 8 – 11, these claims are intended use claims, and it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations, *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987).

Regarding claim 13, see column 4 lines 46 – 49 of Baer.

Regarding claim 16, it is well known in the art, that with appropriate techniques a broadband spectrum emission can be narrowed, for any type of laser.

Claims 6, 7, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baer in view of Emmett as applied to claims 1, 3 – 5, 8 – 11, 13, 17, 18, 19 and 21 above, and further in view of Greene US 4,945,547 (herein after known as Greene). Baer in view of Emmett teaches the invention as outlined in the rejection above, but fails to teach a discontinuous surface and

Art Unit: 2828

reflector. However, Greene teaches both in his patent. Fig. 1 of Greene shows discontinuous surface defined by the placing of the gain media 12, all of which have a coating reflector 20.

Furthermore, the central space in the cavity is free to hold another material, such as a structure or a reflector. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Baer in view of Emmett as taught by Greene.

Claim 2, 12 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baer in view of Emmett as applied to claims 1, 3 – 5, 8 – 11, 13, 17, 18, 19 and 21 above, and further in view of Smith US 3,887,882 (herein after known as Smith). Baer in view of Emmett teaches the invention as outlined in the rejection above, but fails to teach discharge excitation of a gas laser medium. However, Smith teaches this in his patent, see Smith. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Baer in view of Emmett as taught by Smith.

Prior Art

The following US patent is being made of record, even though they were not relied upon in this Office Action, for being similar in subject matter, and may be relied upon in any future Office Actions: 4,651,034.

Art Unit: 2828

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gioacchino Inzirillo whose telephone number is 703-305-1967. The examiner can normally be reached on M-F 8:30AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7721 for After Final communications.

TC2800 RightFAX Telephone Numbers

TC2800 Official Before-Final RightFAX - (703) 872-9318

TC2800 Official After-Final RightFAX - (703) 872-9319

TC2800 Customer Service RightFAX - (703) 872-9317

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


Gioacchino Inzirillo

Examiner

Art Unit 2828



September 30, 2002



PAUL IP
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800